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Supplement to the New Zealand Threat Classification System manual 2008

New qualifiers and amendments to qualifier definitions, 2021

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Department of
Conservation
Te Papa Atawhai

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Explanatory note

The ‘Supplement to the New Zealand Threat Classification System manual 2008: new qualifiers and amendments to qualifier definitions, 2021’ complements the 2008 version of the New Zealand Threat Classification System (NZTCS) manual (Townsend et al. 2008). An initial version of this supplement was released in October 2019 on the NZTCS website (nztcs.org.nz) by Jeremy Rolfe and co-authors.

This 2021 supplement defines new qualifiers which were introduced to the NZTCS methodology following a thorough technical revision of the NZTCS process. The new qualifiers were developed to clarify the threat status of New Zealand endemic species and facilitate the process of conservation prioritisation. The supplement also includes an appendix containing material first published internally within the Department of Conservation in April 2019, which describes the rationale behind adding a ‘Climate Impact (CI)’ qualifier.

This Supplement to the New Zealand Threat Classification System manual 2008: new qualifiers and amendments to qualifier definitions, 2021 presents minor edits to the initial October 2019 version and includes the April 2019 ‘Climate Impact’ qualifier rationale. It will be available alongside the New Zealand Threat Classification System manual 2008 on the DOC website.

Pascale Michel

NZTCS Administrator

Cover: Auckland Island snipe *Coenecorypha aucklandica aucklandica* amongst *Anisitome latifolia*, Enderby Island. Photo: Jo Hiscock.

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Supplement to the New Zealand Threat Classification System manual 2008

New qualifiers and amendments to qualifier definitions, 2021

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Abstract

Definitions and explanatory notes of New Zealand Threat Classification System (NZTCS) 2008 qualifiers have been modified. The qualifier 'Sparse' has been redefined and renamed 'Biologically Sparse' (Sp). 'Data Poor' has been replaced by three new qualifiers to better describe the knowledge gaps that affect assessments. 'Secure Overseas' and 'Threatened Overseas' have each been complemented with two new qualifiers that reflect uncertainty about the state of taxa overseas. Seven other new qualifiers have been added to the NZTCS. They are: Climate Impact (CI), Conservation Research Needed (CR), Naturalised Overseas (NO), Natural State (NS), Possibly Extinct (PE), Population Fragmentation (PF), and Relict (Rel). The qualifier 'Stable' has been removed.

Keywords: threat classification system, threatened species, endangered species, threat listing process, conservation status, manual, qualifiers, climate, New Zealand

1. Background

The New Zealand Threat Classification System (NZTCS) manual 2008 was published by the Department of Conservation (Townsend et al. 2008) to provide criteria for assessing the conservation status of organisms living in the wild in New Zealand. It also defined 15 ‘Qualifiers’ to be used with the assessments.

A technical review of the NZTCS was carried out during 2018/19 (see Rolfe, 2019). Twenty-three past and present members of NZTCS assessment panels were surveyed for their opinions on a range of technical issues that had been identified with the system since publication of the manual (Townsend et al. 2008). Respondents to the survey recommended several new qualifiers, amendments to qualifier definitions and explanatory notes.

The review also recommended additional changes to NZTCS conservation statuses and criteria. These will be implemented in a forthcoming new edition of the NZTCS manual.

2. Results

Definitions and explanations of all qualifiers have been modified to some degree to clarify their scope and purpose.

The name of the qualifier ‘Sparse’ is changed to ‘Biologically Sparse’ to better reflect its definition. ‘Data Poor’ has been replaced by three new qualifiers: ‘(DPR) Data Poor: Recognition’, ‘(DPS) Data Poor: Size’, and ‘(DPT) Data Poor: Trend’.

‘Secure Overseas’ and ‘Threatened Overseas’ have been complemented with additional qualifiers. ‘Secure Overseas?’ and ‘Threatened Overseas?’ indicate uncertainty about whether an overseas taxon is conspecific with a New Zealand taxon of the same name. ‘Secure? Overseas’ and ‘Threatened? Overseas’ indicate uncertainty about the conservation status of overseas populations of a non-endemic taxon.

In addition to the qualifiers described above there are seven other new qualifiers have been added to the NZTCS. They are:

- CI Climate Impact
- CR Conservation Research Needed
- NO Naturalised Overseas
- NS Natural State
- PE Possibly Extinct
- PF Population Fragmentation
- Rel Relict

The full list of qualifiers with their definitions and explanations is presented below. This list replaces Section 11. Qualifiers (pp. 28–30) of the of the NZTCS manual (Townsend et al. 2018) and is used for all new NZTCS assessments from May 2019. There are now 24 qualifiers that can be used for NZTCS assessments.

3. New qualifiers

Qualifiers are an integral part of the New Zealand Threat Classification System. They help define a taxon's assessment, status and management.

The qualifiers are listed below in thematic groups covering the NZTCS assessment process, biological attributes of taxa, pressures on taxa and management of them, population state, and population trend.

Assessment process qualifiers

De Designated

A taxon that the Expert Panel has assigned to what they consider to be the most appropriate status without full application of the criteria.

For example, a commercial fish stock that is being fished down to Biomass Maximum Sustainable yield (BMSy) may meet criteria for 'Declining'; however, it could be designated as 'Not Threatened' if the Expert Panel believes that this better describes the taxon's risk of extinction.

DPR Data Poor: Recognition

Confidence in the assessment is low because of difficulties in determining the identity of the taxon in the field and/or in the laboratory.

Taxa that are Data Poor Recognition (DPR) will often be Data Poor Size (DPS) and Data Poor Trend (DPT). In such cases, the taxon is most likely to be Data Deficient.

DPS Data Poor: Size

Confidence in the assessment is low because of a lack of data on population size.

DPT Data Poor: Trend

Confidence in the assessment is low because of a lack of data on population trend.

Biological attribute qualifiers

IE Island Endemic

A taxon whose natural distribution is restricted to one island archipelago (e.g. Auckland Islands) and is not part of the North or South Islands or Stewart Island/Rakiura.

A taxon cannot be IE if it is Secure Overseas (SO, SO?, S?O) or Threatened Overseas (TO, TO?, T?O).

NS Natural State

A taxon that has a stable or increasing population that is presumed to be in a natural condition i.e. has not experienced historical human-induced decline.

This qualifier represents the 'Natural' Population State value in the NZTCS database.

RR Range Restricted

A taxon naturally confined to specific substrates, habitats or geographic areas of less than 1000 km² (100 000 ha); this is assessed by taking into account the area of occupied habitat of all subpopulations (and summing the areas of habitat if there is more than one subpopulation), e.g. Chatham Island forget-me-not (*Myosotidium hortensia*) and Auckland Island snipe (*Coenocorypha aucklandica aucklandica*).

This qualifier can apply to any ‘Threatened’ or ‘At Risk’ taxon. It is redundant if a taxon is confined to ‘One Location’ (OL).

Sp Biologically Sparse

The taxon naturally occurs within typically small and widely scattered subpopulations.

This qualifier can apply to any ‘Threatened’ or ‘At Risk’ taxon.

Pressure Management qualifiers

CD Conservation Dependent

The taxon is likely to move to a worse conservation status if current management ceases.

The term ‘management’ can include indirect actions that benefit taxa, such as island biosecurity. Management can make a taxon CD only if cessation of the management would result in a worse conservation status. The influence of the benefits of management on the total population must be considered before using CD. The benefit of managing a single subpopulation may not be adequate to trigger CD, but may trigger Partial Decline (PD). Taxa qualified CD may also be PD because of the benefits of management.

CI Climate Impact

The taxon is or is predicted to be adversely affected by long-term climate trends and/or extreme climatic events.

Variations from ‘normal climatic conditions’ may be extended periods (e.g. a month, season or year) of higher-than-normal rainfall or below-normal sunshine hours, a short duration extreme (i.e. rare) event such as an intense tropical storm or 10-day cold spell, or gradual long-term changes to sea level or average temperature due to climate change.

Adverse effects of climate change may be direct or indirect. Direct effects could include, for example, the impact of extreme weather on populations. Indirect effects could include, for example, increased impacts from predators that have benefitted from environmental changes caused by climate change.

The following questions provide a guide to using the CI Qualifier:

Is the taxon adversely affected by long-term changes in the climate, such as an increase in average temperature or sea-level rise?

If NO = no Qualifier but needs monitoring and periodic re-evaluation because projected changes to the average climate and sea-level rise may adversely impact the taxon (including via changes to the distribution and prevalence of pests, weeds and predators) in the future.

If YES = CI Qualifier

Is the taxon adversely affected by extreme climate events, such as a drought, storm or heatwave?

If No = no Qualifier but needs monitoring and periodic re-evaluation because projected changes to the climate are likely to increase the frequency and/or severity of these events in the future.

If YES = CI Qualifier

Use of the Climate Impact Qualifier would indicate the need for more in-depth research, ongoing monitoring of climate impacts, and potentially a climate change adaptation plan for the taxon.

Additional questions for analysis of climate impacts are available in Appendix 1, below.

CR Conservation Research Needed

Causes of decline and/or solutions for recovery are poorly understood and research is required.

PF Population Fragmentation

Gene flow between subpopulations is hampered as a direct or indirect result of human activity.

Naturally disjunct populations are not considered to be 'fragmented'.

RF Recruitment Failure

The age structure of the current population is such that a catastrophic decline is likely in the future.

Failure to produce new progeny or failure of progeny to reach maturity can be masked by apparently healthy populations of mature specimens.

Population Trend Qualifiers

EF Extreme Fluctuations

The taxon experiences extreme unnatural population fluctuations, or natural fluctuations overlaying human-induced declines, that increase the threat of extinction.

When ranking taxa with extreme fluctuations, the lowest estimate of mature individuals should be used for determining population size, as a precautionary measure.

EW Extinct in the Wild

The taxon is known only in captivity or cultivation or has been reintroduced to the wild but is not self-sustaining.

Assessment of a reintroduced population should be considered only when it is self-sustaining.

A population is deemed to be self-sustaining when the following two criteria have been fulfilled:

it is expanding or has reached a stable state through natural replenishment and at least half the breeding adults are products of the natural replenishment; and it has been at least 10 years since reintroduction.

Inc Increasing

There is an ongoing or forecast increase of > 10% in the total population, taken over the next 10 years or three generations, whichever is longer.

Note that this qualifier is redundant for taxa ranked as 'Recovering'.

PD Partial Decline

The taxon is declining over most of its range, but with one or more secure populations (such as on offshore islands).

Partial decline taxa (e.g. North Island kākā *Nestor meridionalis septentrionalis*) is declining towards a small stable population. The Relict qualifier may be appropriate when the population has stabilised.

PE Possibly Extinct

A taxon that has not been observed for more than 50 years but for which there is little or no evidence to support declaring it extinct.

This qualifier might apply to Data Deficient and Nationally Critical taxa.

Rel Relict

The taxon has declined since human arrival to less than 10% of its former range but its population has stabilised.

The range of a relictual taxon takes into account the area currently occupied as a ratio of its former extent. Reintroduced and self-sustaining populations within or outside the former known range of a taxon should be considered when determining whether a taxon is relictual.

This definition is modified from the definition of the At Risk – Relict category in the NZTCS manual (Townsend et al. 2008). The main difference is that trend is not included in the qualifier definition. This enables the qualifier to be applied to any taxon that has experienced severe range contraction, regardless of whether that contraction continues or has been arrested.

This qualifier complements the ‘Naturally Uncommon (NU)’ qualifier which can be applied to taxa whose abundance has declined but which continue to occupy a substantial part of their natural range. It may also replace the ‘Partial Decline (PD)’ qualifier once a taxon’s population has stabilised within a reduced area.

Population State Qualifiers

NO Naturalised Overseas

A New Zealand endemic taxon that has been introduced by human agency to another country (deliberately or accidentally) and has naturalised there e.g. *Olearia traversiorum* in the Republic of Ireland.

OL One Location

Found at one location in New Zealand (geographically or ecologically distinct area) of less than 100 000 ha (1000 km²), in which a single event (e.g. a predator irruption) could easily affect all individuals of the taxon, e.g. L’Esperance Rock groundsel (*Senecio esperensis*) and Open Bay Island leech (*Hirudobdella antipodum*).

‘OL’ can apply to all ‘Threatened’, ‘At Risk’, Non-resident Native – Coloniser and Non-resident Native – Migrant taxa, regardless of whether their restricted distribution in New Zealand is natural or human-induced. Resident native taxa with restricted distributions but where it is unlikely that all sub-populations would be threatened by a single event (e.g. because water channels within an archipelago are larger than known terrestrial predator swimming distances) should be qualified as ‘Range Restricted’ (RR).

SO Secure Overseas

The taxon is secure in the parts of its natural range outside New Zealand.

SO? Secure Overseas?

It is uncertain whether a taxon of the same name that is secure in the parts of its natural range outside New Zealand is conspecific with the New Zealand taxon.

S?O Secure? Overseas

It is uncertain whether the taxon is secure in the parts of its natural range outside New Zealand.

TO Threatened Overseas

The taxon is threatened in the parts of its natural range outside New Zealand.

TO? Threatened Overseas?

It is uncertain whether a taxon of the same name that is threatened in the parts of its natural range outside New Zealand is conspecific with the New Zealand taxon.

T?O Threatened? Overseas

It is uncertain whether the taxon is threatened in the parts of its natural range outside New Zealand.

4. Acknowledgements

Many people who have had a long history of working with the NZTCS have contributed to the revision of qualifiers. We are grateful to the anonymous respondents of the technical survey who provided us with a clear direction to make these changes. We especially thank Rod Hitchmough, Peter de Lange, Hugh Robertson and Graeme Taylor who provided ongoing advice. The new Climate Impact qualifier was developed by Andrew Tait (NIWA) in consultation with Paul Phifer (Ian Axford Fellow from U.S. Fish and Wildlife Service). Michelle Bradshaw made useful comments on the manuscript.

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Appendix 1

Climate Impact (CI) Qualifier for the New Zealand Threat Classification System (TCS)

Document version 8¹: 1 April 2019

Jeremy Rolfe, Troy Makan, Paul Phifer² and Andrew Tait

Background

Impacts on taxa caused by the climate are often overlooked when NZTCS assessments are being done. Impacts may be from sudden events (e.g., storm surges wiping out coastal habitat) or gradual changes (e.g. changing sex ratios of tuatara in response to changes in mean temperature). As the long-term climate patterns change, acknowledgement of climate impacts on taxa is becoming an important component of NZTCS assessments. Therefore, a new Qualifier has been introduced to the NZTCS to signal those taxa that are adversely affected by the climate.

Definition of climate change qualifier

The taxon is adversely affected by long-term climate trends and/or extreme climatic events.

Usage guide

The following questions provide a guide to using the CI Qualifier:

1. Is the taxon adversely affected by long-term changes in the climate, such as an increase in average temperature or sea-level rise?
 - a. **If NO = no Qualifier but needs monitoring and periodic re-evaluation because projected changes to the average climate and sea-level rise may adversely impact the taxon (including via changes to the distribution and prevalence of pests, weeds and predators) in the future.**
 - b. **If YES = CI Qualifier**
2. Is the taxon adversely affected by extreme climate events, such as a drought, storm or heatwave?
 - a. **If No = no Qualifier but needs monitoring and periodic re-evaluation because projected changes to the climate are likely to increase the frequency and/or severity of these events in the future.**
 - b. **If YES = CI Qualifier**

Use of the Climate Impact Qualifier would indicate the need for more in-depth research, ongoing monitoring of climate impacts and, potentially, a climate change adaptation plan for the taxon.

Additional questions for the evaluation of climate impact

1. Has there been specific research on the sensitivity of the taxon to climate variability and/or climate change?

If yes, does the research indicate that the taxon is adversely impacted by climate variability and/or changing climate (e.g. the sex ratio of tuatara is sensitive to ambient air temperature, with warming temperatures likely to exacerbate the present-day trend toward more males than females)?

¹ File reference: DOC-5466372

² Ecological Services, US Fish and Wildlife Services, 300 Westgate Center Drive, Hadley, MA 01035, USA

2. Is the spatial distribution of the taxon influenced by average climatic conditions (i.e. does it exist primarily in warmer/cooler/wetter/drier areas)?
If yes, are long-term projected changes to the average climate likely to have a negative impact on its distribution?

3. Is the taxon negatively impacted by variations from the normal monthly, seasonal or annual climate (i.e. a drier-than-normal summer or a warmer-than-normal year)?
If yes, will projections of climate change on monthly-to-annual climate variability (i.e. present-day warmer-than-normal years will become much more frequent in the future; drought frequency and intensity is projected to increase) potentially lead to an exacerbation or reduction of impacts?
If no, will projections of changes to monthly-to-annual climate variability potentially lead to impacts on the taxon that are not currently experienced?

4. In the past, has the taxon been negatively impacted by extreme (and hence relatively rare) climatic events (i.e. heavy rainfall, flooding [coastal storm surge or riverine], high winds, heavy snowfalls, extreme hot or cold temperatures)?
If yes, will projections of climate change on the frequency and intensity of extreme events (i.e. heavy rainfalls are likely to become more intense) potentially lead to an exacerbation of impacts?
If no, will projections of changes to extreme events potentially lead to impacts on the taxon that are not currently experienced?

Information on climate change for New Zealand

- General information on climate change for New Zealand is available from the Ministry for the Environment (MfE): <http://www.mfe.govt.nz/climate-change>.

This page includes a link to an 'Overview of likely climate change impacts in New Zealand' page, which can be regarded as basic background reading: <https://www.mfe.govt.nz/node/16596>.

- The primary source of information on future projections of New Zealand's climate is the following 2016 MfE report: <https://www.mfe.govt.nz/publications/climate-change/climate-change-projections-new-zealand>.

The 'Snapshot' document is a synopsis of the full report: <http://www.mfe.govt.nz/node/21991>.

- A 2017 MfE report on coastal hazards and climate change is located here: <https://www.mfe.govt.nz/publications/climate-change/coastal-hazards-and-climate-change-guidance-local-government>.

A summary report and series of fact sheets are also available: <https://www.mfe.govt.nz/publications/climate-change/preparing-coastal-change-summary-of-coastal-hazards-and-climate-change>.

- The Ministry for Primary Industries (MPI) maintains the following webpage listing published climate change reports funded by the Sustainable Land Management and Climate Change programme: <https://www.mpi.govt.nz/funding-and-programmes/farming/sustainable-land-management-and-climate-change-research-programme/sustainable-land-management-and-climate-change-slmacc-research-reports/>.
- A searchable repository of New Zealand-focussed climate change reports, fact sheets and published papers is: <http://www.climatecloud.co.nz>.